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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/500,148	04/04/2005	Torbjorn Jacobsson	P69855US0	5249

136 -7590 12/06/2007
JACOBSON HOLMAN PLLC
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SUITE 600
WASHINGTON, DC 20004

EXAMINER

CHUKWURAH, NATHANIEL C

ART UNIT	PAPER NUMBER
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3721

MAIL DATE	DELIVERY MODE
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12/06/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/500,148

Applicant(s)

JACOBSSON ET AL.

Examiner

Nathaniel C. Chukwurah

Art Unit

3721

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 September 2007.
2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 2 and 4-9 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-2 and 4-9 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 09 July 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This office action is in response to the amendment filed on 9/13/2007.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-2, 4-6 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shaw (US 3,924,690) in view of Beccu et al. (US 6,062,322).

With regard to claims 1 and 9, the patent to Shaw discloses pressure-air driven percussion device (1) for a down-the-hole drill with a hammer-piston (3), axially reciprocally movable in a hammer-piston chamber as shown in the second Figure, through the system pressure considered to be a driving device, a slidable drill bit (6), an air cushion (col. 5, lines 50-54) for reducing percussive power. Shaw's reference discloses the claimed subject matter except for forming the air cushion in a drill bit bushing between the hammer-end and drill bit upper end.

Beccu et al.'s reference discloses pressure-air driven percussion device (10) including a hammer end (16B), and a drill bit upper end (30 Fig. 1A) wherein the movement of the hammer in downward direction causes the hammer end (16B) to compress air (col. 5, lines 38-39), and a sealing effect is formed in the seal member (36) between the hammer end (16B) and the drill bit upper end (30) as shown in Figure 1B; the air-cushion is arranged to be formed in a volume defined by the upper end of the drill bit, the drill bit bushing and the hammer-end of the hammer-piston, for example, the compressed air enters the bottom chamber of seal (36) which

form a volume defined by the drill bit , the drill bit bushing (chamber seal) and the hammer-end of the hammer-piston. See Beccu et al. (Figs.1A and 1B).

In view of the teaching of the reference of Beccu et al., it would have been obvious to one skilled in the art at the time of the invention to modify the air cushion of Shaw with the arrangement of the hammer end, and a drill bit upper end and seal member of Beccu et al. in order to further reduce the impact of the hammer on the drill bit and align the hammer with the drill bit in each downward operation.

With regard to claim 2, the modified percussion of Shaw includes the upper end portion of the drill bit sealingly and slidingly supported in the drill bit bushing as disclosed in the Beccu et al. (Figs.1A and 1B).

With regard to claim 4, the drill bit bushing of the modified Shaw is arranged to be supported by a housing (4) of the down-the-hole drill (1).

With regard to claim 5, the hammer-piston chamber as shown in the second Figure is formed by a housing of the down-the-hole drill (1).

With regard to claim 6, Shaw's pressure system considered to be the driving device includes a leakage passage (23, 24) for the pressure-air, through which a flushing position is established, and pressure-air is allowed to leak passed the driving device in far advanced positions in the percussion direction of the hammer-piston.

Claim Rejections - 35 USC § 103

4. Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shaw (US 3,924,690) in view of Beccu et al. (US 6,062,322) as applies to claim 1 and further in view of Harrinton (US 5,131,476).

With regard to claim 7, modified reference of Shaw includes the hammer-piston of provided with a central axial channel (21), continuous in the drill bit except over a foot valve, which is fastened in the drill bit and seals against the hammer-piston. Harrinton's reference teaches a foot valve (30) for exhausting air pressure beneath the piston. In view of the teaching of Harrinton's reference, it would have been obvious to one skilled in the art at the time of the invention to modify the Shaw's percussion device to include the foot valve in order to exhaust air pressure beneath the piston.

With regard to claim 8, the modified reference of Shaw would include the air-cushion being limited by the outside surface of the foot valve because of the flange formed on the outer surface of the foot valve (Harrinton Fig. 1).

Response to Arguments

5. Applicant's arguments filed 9/13/2007 have been fully considered but they are not persuasive.

Applicant argues on page 8 that there is no pressure chamber formed between the piston, a drill bit upper end and a drill bit bushing. Applicant's argument is not persuasive because the compressed air at the bottom chamber 26a will enter the seal 36 to form an air-cushioning effect formed in a volume defined by the seal, drill bit and distal hammer section.

Applicant further argues that since in Beccu et al. the sealing effect is used to establish a peripheral chamber, such a combination would point away from the invention, where a chamber inside the drill bit bushing is established. Applicant's argument is not persuasive because Shaw has shown the important of air cushion, which reduces the piston impact on the anvil, and Beccu et al. has shown that air cushioning effect is formed in a volume defined by the seal, drill bit and

distal hammer section. The combination of Shaw and Beccu et al. will produce a predictably result.

Applicant further argues that the present invention, according to amended claims 1 and 9, is non-obvious, also dependent claims 2 and 4 through 8 are non-obvious.

Applicant's argument is not persuasive since the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Beccu et al.'s reference teaches a volume defined by the seal, drill bit and distal hammer section.

Applicant further argues that Harrington is even more distant from the invention than Shaw and Beccu et al. Applicant's argument is not persuasive because Harrington teaches similar down-the-hole drill.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

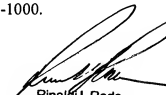
7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nathaniel C. Chukwurah whose telephone number is (571) 272-4457. The examiner can normally be reached on M-F 6:00AM-2:30PM.

8. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rinaldi Rada can be reached on (571) 272-4467. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

9. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

NC

December 4, 2007.



Rinaldi I. Rada
Supervisory Patent Examiner
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